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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/708,394	02/27/2004	Yukio Koyanagi	22040-00030-US	2393

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EXAMINER

LAO, LUN S

ART UNIT PAPER NUMBER

2643

DATE MAILED: 03/16/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/708,394

Applicant(s)

KOYANAGI, YUKIO

Examiner

Lun-See Lao

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 February 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Introduction

1. Claims 1-15 of U.S. Application 09/188,823 filed on 02/27/2004 are presented for examination.

Claim Objections

2. Claim 14 is objected to because of the following informalities: because claim 14 duplicate claim 15. Appropriate correction is required.

3. Claim 15 is objected to because of the following informalities: because claim 15 duplicate claim 14. Appropriate correction is required.

Claim Rejections - 35 USC § 103

4. Claim 1, 4-7 and 10-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Uramoto (US PAT. 5,910,904) in view of Wilkinson (JP 06-326555).

Consider 1 and 7 Uramoto teaches a filter device, comprising:

a first filter (see fig.6, 3LB) for multiplying a signal of each tap of a tapped delay line (see fig.6, □) by several times according to given first filter factors and then performing addition and output, the delay line being made up of a plurality of delay units; and a second filter (5AB) for multiplying a signal of each tap (L11-L44) of a tapped delay line by several times according to given second filter factors and then performing addition and output, the delay line being made up of a plurality of delay units; wherein the first filter factors have a symmetrical sequence in which values are set so that a sum is not zero (see col.7 line 6-col.8 line 53), but Uramoto does not clearly teach a sum of

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every other terms is equal to a sum of the other every other terms with the same signs; and the second filter factors have a symmetrical sequence in which values are set so that a sum is zero and a sum of every other terms is equal to a sum of the other every other terms with opposite signs.

However, Wilkinson teaches a sum of every other terms is equal to a sum of the other every other terms with the same signs (the first filter factor is composed of the ratios of -1, 0, 9,16, 9, 0, -1); and the second filter factors have a symmetrical sequence in which values are set so that a sum is zero and a sum of every other terms is equal to a sum of the other every other terms with opposite signs (the second filter factor is composed of the ratios of 1,0, -9,16,-9,0,1 and see figs 5, 7 and col.5 lines 1-32)..

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of Wilkinson into Uramoto to improved the audio output.

Consider claims 12 and 14-15 Uramoto teaches a sound quality adjusting method, comprising:

a first filtering (see fig.6 3LA) step of multiplying (L10-L44) a signal of each tap (of a tapped delay line (see fig.6, □),which delays an input sound signal, by several times by using first filter factors and then performing addition and output, the first filter factors having a symmetrical sequence in which values are set so that a sum is not zero (see col.7 line 6-col.8 line 53), and a second filtering (see fig.6, 5AB) step of multiplying a signal of each tap of a tapped delay line (see fig.6, □), which delays an input sound

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signal, by several times by using second filter factors (A11-A23) and then performing addition (7) and output (see col.7 line 6-col.8 line 53);and

a gain controlling step (see fig.6, (4,6 level control means)) of controlling a gain of a sound signal having passed through the first filtering (3LB) step and a gain of a sound signal having passed through the second filtering (5AB) step; and a summing step (7) of summing the sound signals having undergone gain control in the gain controlling step and outputting a sum (see col.7 lines 6-51); but Uramoto teaches a sum of every other terms is equal to a sum of the other every other terms with the same signs; the second filter factors having a symmetrical sequence are set so that a sum is zero and a sum in which values of every other terms is equal to a sum of the other every other terms with opposite signs.

However, Wilkinson teaches a sum of every other terms is equal to a sum of the other every other terms with the same signs (the first filter factor is composed of the ratios of -1, 0, 9,16, 9, 0, -1); and the second filter factors have a symmetrical sequence in which values are set so that a sum is zero and a sum of every other terms is equal to a sum of the other every other terms with opposite signs (the second filter factor is composed of the ratios of 1,0, -9,16, -9, 0, 1 and see figs 5, 7 and col.5 lines 1-32).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of Wilkinson into Uramoto to improved the audio output.

Consider claims 4,10,13 and 5,11, Wilkinson teaches the sound quality adjusting device of the sequence of the first filter factors is composed of ratios of -1, 0, 9, 16, 9, 0, and -1 and the sequence of the second filter factors is composed of ratios of 1, 0, -9, 16, -9, 0, and 1 (see fig.7 and page 5 lines 1-15) and the sound quality adjusting device at least one of the first filter and the second filter is cascaded to a subsequent stage of at least one of the first filter and the second filter (see fig.2 and page 1 lines 33-38).

Consider claims 6 Uramoto teaches the sound quality adjusting device of the first filter (see fig.6, 3LA) and the second filter 5AB) are cascaded in parallel to a subsequent stage of the first filter, the first filter (3LA) and the second filter (5AB) are cascaded in parallel to a subsequent stage of the second filter, control is performed on a gain (4,6) of an output signal from each of the cascaded filters in the subsequent stage, and sound signals having been subjected to gain control are summed (7) and outputted (see col.7 line 7-59).

5. Claims 2-3 and 8-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Uramoto (US PAT. 5,910,904) as modified by Wilkinson (JP 06-326555) as applied to claims 1 and 7 above, and further in view of Kovtun (US PAT. 6,512,944)

Consider claims 2,8 and 3,9 Uramoto and Wilkinson do not clearly teach the sound quality adjusting device of the second filter factors, signs of values other than a median of the sequence of the first filter factors are changed while causing absolute values of the sequence to remain the same; and the sound quality adjusting device of the second filter factors, signs of values other than a median of the sequence of the first filter

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factors are changed while causing absolute values of the sequence to remain the same, and the median of the sequence is subtracted from a reference value.

However, Kovtun teaches the sound quality adjusting device of the second filter factors (see scale factor formula col.5, line 1-15), signs of values other than a median of the sequence of the first filter factors (see scale factor formula col.5, line 1-15) are changed while causing absolute values of the sequence to remain the same (see figs1-6 col. 4 line 14-col. 5 line 51); and the sound quality adjusting device of the second filter factors(see scale factor formula col.5, line 1-15), signs of values other than a median of the sequence of the first filter factors (see scale factor formula col.5, line 1-15) are changed while causing absolute values of the sequence to remain the same, and the median of the sequence is subtracted (fig.2, 34) from a reference value (see figs1-6 col. 4 line 14-col. 5 line 51)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of Kovtun into the teaching of Wilkinson and Uramoto to provide an improved, low-pass filter capable of removing noise signal component from higher frequency signal.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Maag (US PAT. 5,892,833); and Mahant-Shetti (US PAT. 6,058,404) are recited to show other related the sound quality adjusting device and filter device used therefor, sound quality adjusting method, and filter designing method.

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7. Any response to this action should be mailed to:

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Washington, D.C. 20231

or faxed to: (703) 872-9306

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington.

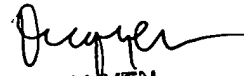
VA., Sixth Floor (Receptionist).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lao,Lun-See whose telephone number is (703) 305-2259. The examiner can normally be reached on Monday-Friday from 8:00 to 6:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Curtis Kuntz, can be reached on (703) 305-4708.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 whose telephone number is (703) 306-0377.

Lao,Lun-See
Patent Examiner
US Patent and Trademark Office
Crystal Park 2
(703305-2259)


DUC NGUYEN
PRIMARY EXAMINER